

REMARKS

By the present amendment, claims 1-10 have been amended to correct “dendorimers” to “dendrimers,” and new claims 11-20 have been added. Support for claims 11-20 is found in the original application, for example, claim 2 (claims 11-13, 16-18 and page 3, line 12 (claims 14-15, 19-20).

Claims 1-12 are pending in the present application. Claim 1 is the only independent claim.

In the Office Action, claims 1-10 are rejected under 35 U.S.C. 102(a) as anticipated by US 2002/0006626 to Kim et al. (“Kim”).

The rejection is respectfully traversed. The patterned dendrimer surface of Kim is very different from the fine particles as used in the presently claimed invention. Thus, Kim fails to teach or suggest the process of the presently claimed invention and its advantages.

Specifically, Kim discloses a method comprising reacting derivatized silanes with a solid surface, reacting functionalized dendrimers with the derivatized silanes, then reacting biomolecules with the patterned dendrimers. However, the substrate used in Kim is completely different from the fine particles used in the present invention.

More precisely, Kim discloses a substrate consisting of a “metal surface or a glass surface” (para. 16) and the only practical example is a “silicon wafer with evaporated gold” (para. 19, see also Example 1 at para. 36). Further, Kim is completely silent as to whether its process would be applicable to a different substrate, and whether it would be advantageous to

attempt such modification. Accordingly, a person of ordinary skill in the art would find no motivation and no guidance for changing the substrate and the process of Kim, so that that person would use the flat wafer-type surface of Kim.

In contrast, in the presently claimed invention, multi-layer dendrimers are formed on the surface of fine particles, amino radicals are formed on the surface of the dendrimers, as recited in present claim 1. As a result, it is possible to extract nucleic acid or protein using these amino radicals with greatly improved effectiveness and shortened extraction time, as disclosed in the present specification (see specification at the paragraph bridging pages 2-3).

More specifically, in Kim, upon formation of the dendrimers having molecules as a core in advance, an amino radical on a part of the surface of dendrimers is activated, thereby directly covalently bonded to the surface of the substrate. In other words, Kim has spherical dendrimers arranged on the surface of a flat substrate. A drawback of this construction is that a bonding area between the flat surface of the substrate and the dendrimers is small, so that bonding is unstable and a bonding force is weak.

This problem is avoided with the fine particles as in the presently claimed invention. Thus, the surface of the fine particle can be coated with amino-silane, and further amido-amine can be subjected to multi-branching growth, thereby allowing the surface of the fine particle to be subjected to dendrimers. As a result, spherical dendrimers having the fine particle as a core can be obtained. The dendrimer function can be added by directly covalently bonding to the surface

of the fine particle, thereby obtaining high bonding stability between the surface of the fine particle and the dendrimers.

Also, Kim relates to a static extraction where a solution flows on the flat substrate. In contrast, the presently claimed invention allows a dynamic extraction where the fine particle is mixed with and stirred in a solution, which can greatly increase the capability of extraction of nucleic acid or protein by dendrimers.

Kim is completely silent regarding these features of the presently claimed invention and their advantages. Therefore, the present claims are not anticipated by, and not obvious over, Kim.

In addition, with respect to the dependent claims, Kim is completely silent regarding the combined features of these respective claims. In particular, Kim is completely silent regarding fine particles comprising magnetic bodies or bacteria-derived magnetic bodies, as recited in claims 11-13 and 16-18, and is also completely silent regarding fine particles have a size of about 50 to about 60 microns, as recited in claims 14-15 and 19-20. Therefore, the respective dependent claims, and in particular each of claims 11-20, are not anticipated by, and not obvious over, Kim.

In view of the above, it is submitted that the rejections should be withdrawn.

In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

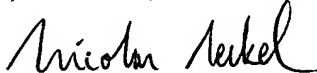
Amendment
Serial No. 10/647,232
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If there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

If this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to Deposit Account No. 50-2866.

Respectfully submitted,

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